

1. Solve the quadratic equation below. Then, choose the intervals that the solutions belong to, with  $x_1 \leq x_2$  (if they exist).

$$-14x^2 - 13x + 7 = 0$$

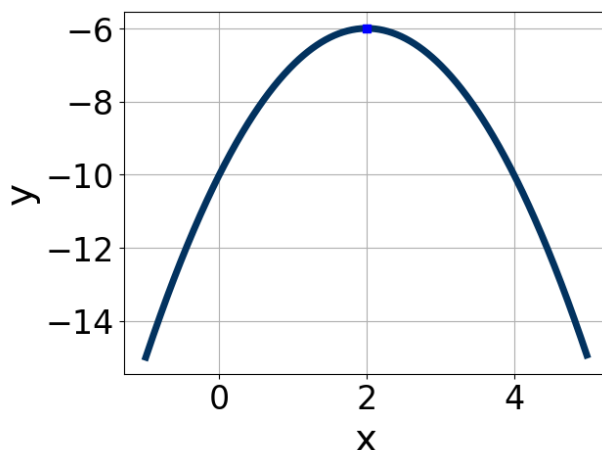
- A.  $x_1 \in [-25.11, -23.76]$  and  $x_2 \in [22.6, 25.7]$
  - B.  $x_1 \in [-0.49, -0.3]$  and  $x_2 \in [1.1, 3.2]$
  - C.  $x_1 \in [-2.86, -1.21]$  and  $x_2 \in [-0.2, 0.7]$
  - D.  $x_1 \in [-6.36, -4.31]$  and  $x_2 \in [17.4, 19.1]$
  - E. There are no Real solutions.
- 

2. Solve the quadratic equation below. Then, choose the intervals that the solutions  $x_1$  and  $x_2$  belong to, with  $x_1 \leq x_2$ .

$$25x^2 - 15x - 54 = 0$$

- A.  $x_1 \in [-6.12, -5.4]$  and  $x_2 \in [0.13, 0.59]$
  - B.  $x_1 \in [-0.76, -0.47]$  and  $x_2 \in [3.58, 3.93]$
  - C.  $x_1 \in [-4.04, -3.17]$  and  $x_2 \in [0.47, 0.87]$
  - D.  $x_1 \in [-1.58, -0.64]$  and  $x_2 \in [1.69, 1.98]$
  - E.  $x_1 \in [-30.39, -29.06]$  and  $x_2 \in [44.7, 45.48]$
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3. Write the equation of the graph presented below in the form  $f(x) = ax^2 + bx + c$ , assuming  $a = 1$  or  $a = -1$ . Then, choose the intervals that  $a$ ,  $b$ , and  $c$  belong to.



- A.  $a \in [-1, 0]$ ,  $b \in [3, 6]$ , and  $c \in [-12, -9]$
- B.  $a \in [1, 2]$ ,  $b \in [-6, -1]$ , and  $c \in [-2, 0]$
- C.  $a \in [-1, 0]$ ,  $b \in [-6, -1]$ , and  $c \in [-12, -9]$
- D.  $a \in [-1, 0]$ ,  $b \in [-6, -1]$ , and  $c \in [1, 6]$
- E.  $a \in [1, 2]$ ,  $b \in [3, 6]$ , and  $c \in [-2, 0]$

- 
4. Factor the quadratic below. Then, choose the intervals that contain the constants in the form  $(ax + b)(cx + d)$ ;  $b \leq d$ .

$$24x^2 + 10x - 25$$

- A.  $a \in [5.71, 7.84]$ ,  $b \in [-9, -3]$ ,  $c \in [3.01, 4.8]$ , and  $d \in [2, 9]$
- B.  $a \in [1.39, 2.74]$ ,  $b \in [-9, -3]$ ,  $c \in [11.17, 12.67]$ , and  $d \in [2, 9]$
- C.  $a \in [-0.34, 1.88]$ ,  $b \in [-20, -15]$ ,  $c \in [0.8, 1.94]$ , and  $d \in [27, 31]$
- D.  $a \in [10.73, 12.47]$ ,  $b \in [-9, -3]$ ,  $c \in [1.86, 2.49]$ , and  $d \in [2, 9]$
- E. None of the above.

5. Solve the quadratic equation below. Then, choose the intervals that the solutions  $x_1$  and  $x_2$  belong to, with  $x_1 \leq x_2$ .

$$10x^2 - 53x + 36 = 0$$

- A.  $x_1 \in [0.82, 0.99]$  and  $x_2 \in [3.18, 4.08]$
  - B.  $x_1 \in [0.55, 0.84]$  and  $x_2 \in [4.16, 4.94]$
  - C.  $x_1 \in [0.35, 0.47]$  and  $x_2 \in [8.74, 9.12]$
  - D.  $x_1 \in [8, 8.12]$  and  $x_2 \in [44.8, 45.7]$
  - E.  $x_1 \in [1.46, 1.63]$  and  $x_2 \in [1.24, 2.58]$
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6. Solve the quadratic equation below. Then, choose the intervals that the solutions belong to, with  $x_1 \leq x_2$  (if they exist).

$$20x^2 - 13x - 9 = 0$$

- A.  $x_1 \in [-29.78, -29.25]$  and  $x_2 \in [28.5, 30.7]$
  - B.  $x_1 \in [-1.64, -0.95]$  and  $x_2 \in [0.1, 0.9]$
  - C.  $x_1 \in [-0.54, -0.12]$  and  $x_2 \in [0.6, 1.5]$
  - D.  $x_1 \in [-8.61, -7.69]$  and  $x_2 \in [19.8, 22.5]$
  - E. There are no Real solutions.
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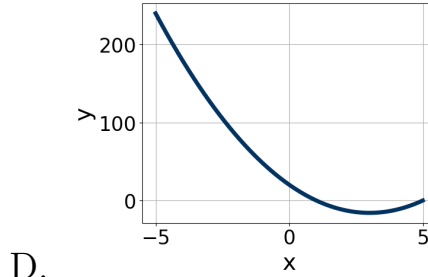
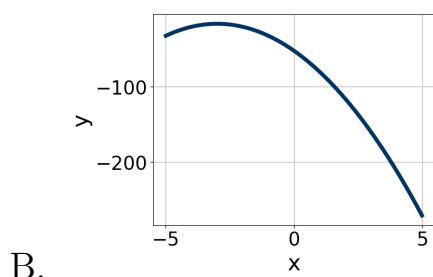
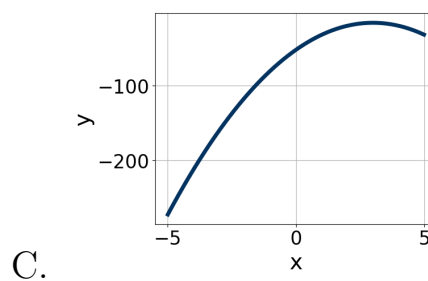
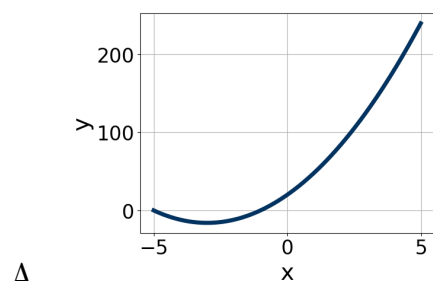
7. Factor the quadratic below. Then, choose the intervals that contain the constants in the form  $(ax + b)(cx + d)$ ;  $b \leq d$ .

$$54x^2 + 33x - 10$$

- A.  $a \in [-0.4, 1.2]$ ,  $b \in [-14, -11]$ ,  $c \in [0.3, 1.3]$ , and  $d \in [41, 54]$
- B.  $a \in [17.6, 19]$ ,  $b \in [-3, 3]$ ,  $c \in [1.6, 3.3]$ , and  $d \in [5, 15]$
- C.  $a \in [8.4, 10.1]$ ,  $b \in [-3, 3]$ ,  $c \in [5.5, 7]$ , and  $d \in [5, 15]$
- D.  $a \in [1.3, 5.3]$ ,  $b \in [-3, 3]$ ,  $c \in [16.4, 21.1]$ , and  $d \in [5, 15]$
- E. None of the above.

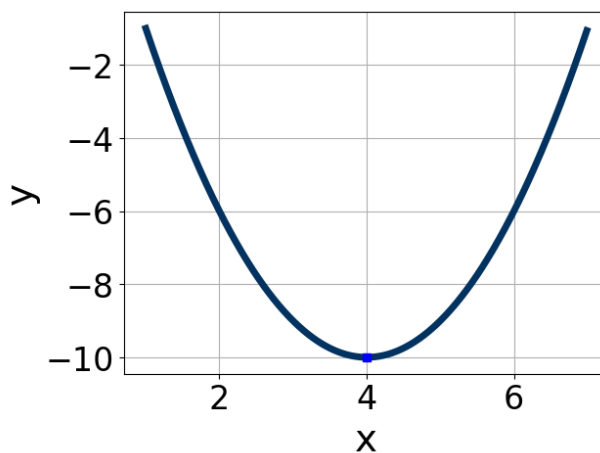
8. Graph the equation below.

$$f(x) = -(x - 3)^2 - 16$$



E. None of the above.

9. Write the equation of the graph presented below in the form  $f(x) = ax^2 + bx + c$ , assuming  $a = 1$  or  $a = -1$ . Then, choose the intervals that  $a, b$ , and  $c$  belong to.

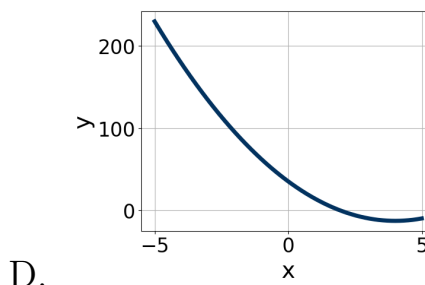
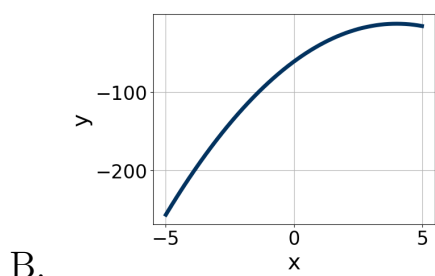
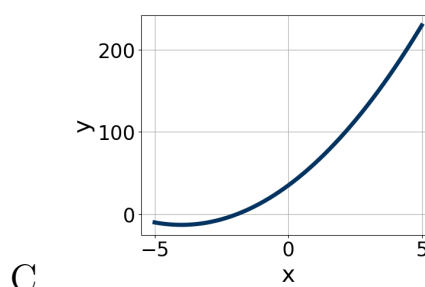
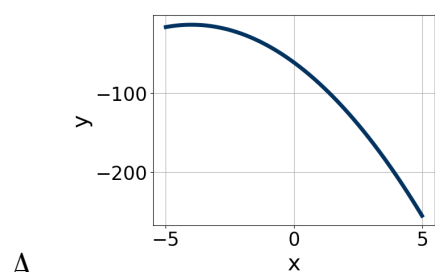


A.  $a \in [0.6, 1.5]$ ,  $b \in [-11, -6]$ , and  $c \in [5, 8]$

- B.  $a \in [-1.5, -0.1]$ ,  $b \in [-11, -6]$ , and  $c \in [-27, -25]$
- C.  $a \in [0.6, 1.5]$ ,  $b \in [8, 11]$ , and  $c \in [5, 8]$
- D.  $a \in [-1.5, -0.1]$ ,  $b \in [8, 11]$ , and  $c \in [-27, -25]$
- E.  $a \in [0.6, 1.5]$ ,  $b \in [8, 11]$ , and  $c \in [25, 28]$

10. Graph the equation below.

$$f(x) = -(x - 4)^2 - 13$$



E. None of the above.

11. Solve the quadratic equation below. Then, choose the intervals that the solutions belong to, with  $x_1 \leq x_2$  (if they exist).

$$17x^2 + 14x - 5 = 0$$

- A.  $x_1 \in [-0.4, -0.1]$  and  $x_2 \in [0.71, 1.59]$
- B.  $x_1 \in [-23.6, -21.9]$  and  $x_2 \in [22.69, 23.43]$
- C.  $x_1 \in [-19.5, -17.5]$  and  $x_2 \in [3.72, 5.33]$
- D.  $x_1 \in [-2, -0.9]$  and  $x_2 \in [0.18, 0.3]$

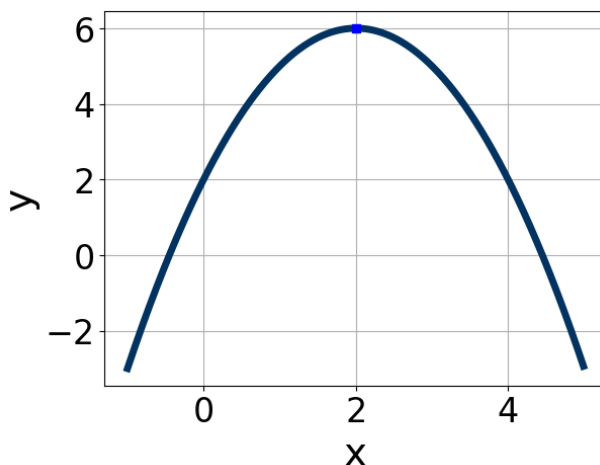
E. There are no Real solutions.

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12. Solve the quadratic equation below. Then, choose the intervals that the solutions  $x_1$  and  $x_2$  belong to, with  $x_1 \leq x_2$ .

$$25x^2 + 60x + 36 = 0$$

- A.  $x_1 \in [-30.76, -28.93]$  and  $x_2 \in [-30, -29.94]$   
B.  $x_1 \in [-1.75, 0.49]$  and  $x_2 \in [-1.24, -1.14]$   
C.  $x_1 \in [-3.31, -1.72]$  and  $x_2 \in [-0.87, -0.59]$   
D.  $x_1 \in [-4.53, -2.51]$  and  $x_2 \in [-0.45, -0.32]$   
E.  $x_1 \in [-7.83, -5.79]$  and  $x_2 \in [-0.31, -0]$

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13. Write the equation of the graph presented below in the form  $f(x) = ax^2 + bx + c$ , assuming  $a = 1$  or  $a = -1$ . Then, choose the intervals that  $a, b$ , and  $c$  belong to.



- A.  $a \in [-2.8, -0.7]$ ,  $b \in [-6, -3]$ , and  $c \in [-11, -9]$   
B.  $a \in [0, 3]$ ,  $b \in [-6, -3]$ , and  $c \in [8, 12]$   
C.  $a \in [-2.8, -0.7]$ ,  $b \in [4, 8]$ , and  $c \in [1, 3]$   
D.  $a \in [0, 3]$ ,  $b \in [4, 8]$ , and  $c \in [8, 12]$   
E.  $a \in [-2.8, -0.7]$ ,  $b \in [-6, -3]$ , and  $c \in [1, 3]$

14. Factor the quadratic below. Then, choose the intervals that contain the constants in the form  $(ax + b)(cx + d)$ ;  $b \leq d$ .

$$36x^2 + 60x + 25$$

- A.  $a \in [3.9, 6.6]$ ,  $b \in [2, 7]$ ,  $c \in [5.47, 6.34]$ , and  $d \in [2, 8]$
  - B.  $a \in [10.9, 12.9]$ ,  $b \in [2, 7]$ ,  $c \in [2.8, 3.1]$ , and  $d \in [2, 8]$
  - C.  $a \in [-0.6, 1.6]$ ,  $b \in [21, 31]$ ,  $c \in [0.81, 1.95]$ , and  $d \in [29, 31]$
  - D.  $a \in [1.1, 4.3]$ ,  $b \in [2, 7]$ ,  $c \in [9.79, 12.69]$ , and  $d \in [2, 8]$
  - E. None of the above.
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15. Solve the quadratic equation below. Then, choose the intervals that the solutions  $x_1$  and  $x_2$  belong to, with  $x_1 \leq x_2$ .

$$10x^2 - 57x + 54 = 0$$

- A.  $x_1 \in [0.21, 0.47]$  and  $x_2 \in [13.33, 14.47]$
  - B.  $x_1 \in [1.4, 1.73]$  and  $x_2 \in [2.3, 3.91]$
  - C.  $x_1 \in [0.77, 0.94]$  and  $x_2 \in [5.55, 7.11]$
  - D.  $x_1 \in [1.04, 1.36]$  and  $x_2 \in [4.17, 5.36]$
  - E.  $x_1 \in [11.91, 12.07]$  and  $x_2 \in [44.83, 45.97]$
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16. Solve the quadratic equation below. Then, choose the intervals that the solutions belong to, with  $x_1 \leq x_2$  (if they exist).

$$17x^2 + 14x + 2 = 0$$

- A.  $x_1 \in [-11.99, -10.69]$  and  $x_2 \in [-5.1, -3]$
- B.  $x_1 \in [-9.23, -7.19]$  and  $x_2 \in [7.2, 8.2]$
- C.  $x_1 \in [-0.48, 1.54]$  and  $x_2 \in [0.3, 1.9]$
- D.  $x_1 \in [-0.93, -0.26]$  and  $x_2 \in [-0.4, 0.5]$

E. There are no Real solutions.

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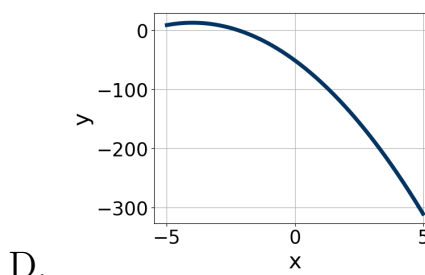
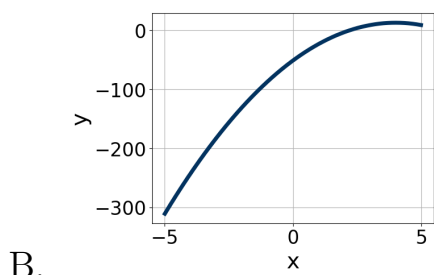
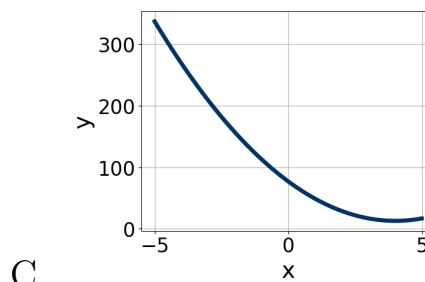
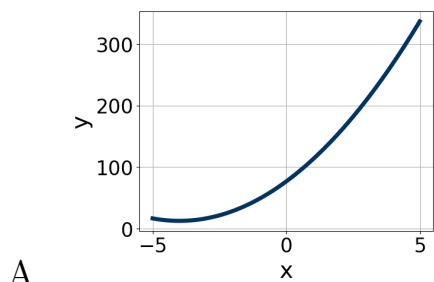
17. Factor the quadratic below. Then, choose the intervals that contain the constants in the form  $(ax + b)(cx + d)$ ;  $b \leq d$ .

$$24x^2 - 2x - 15$$

- A.  $a \in [0.3, 2.3]$ ,  $b \in [-24, -16]$ ,  $c \in [-0.6, 3.4]$ , and  $d \in [16, 19]$   
B.  $a \in [2, 3.2]$ ,  $b \in [-7, -4]$ ,  $c \in [7.4, 8.3]$ , and  $d \in [-6, 5]$   
C.  $a \in [17, 21.2]$ ,  $b \in [-7, -4]$ ,  $c \in [-0.6, 3.4]$ , and  $d \in [-6, 5]$   
D.  $a \in [4, 7.3]$ ,  $b \in [-7, -4]$ ,  $c \in [3.9, 6.8]$ , and  $d \in [-6, 5]$   
E. None of the above.
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18. Graph the equation below.

$$f(x) = (x + 4)^2 + 13$$

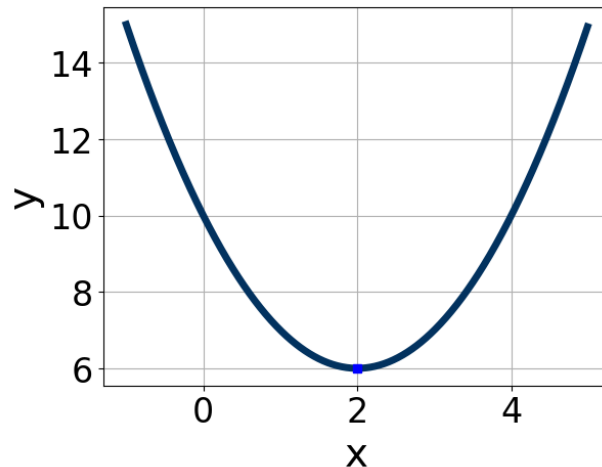


E. None of the above.

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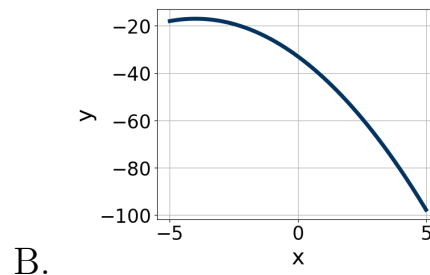
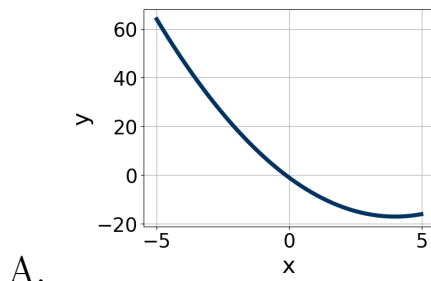
19. Write the equation of the graph presented below in the form  $f(x) = ax^2 + bx + c$ , assuming  $a = 1$  or  $a = -1$ . Then, choose the intervals that  $a$ ,  $b$ , and  $c$  belong to.

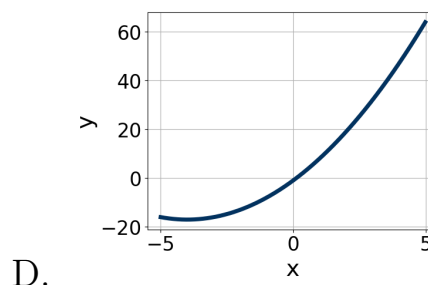
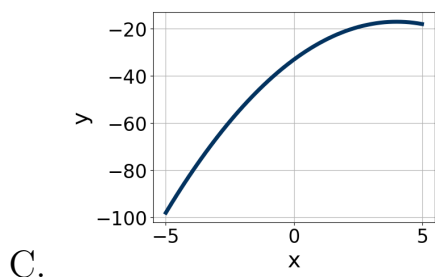


- A.  $a \in [0.9, 1.7]$ ,  $b \in [3, 7]$ , and  $c \in [8, 11]$   
B.  $a \in [0.9, 1.7]$ ,  $b \in [3, 7]$ , and  $c \in [-2, -1]$   
C.  $a \in [-1.2, -0.7]$ ,  $b \in [3, 7]$ , and  $c \in [2, 4]$   
D.  $a \in [-1.2, -0.7]$ ,  $b \in [-4, 0]$ , and  $c \in [2, 4]$   
E.  $a \in [0.9, 1.7]$ ,  $b \in [-4, 0]$ , and  $c \in [8, 11]$

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20. Graph the equation below.

$$f(x) = -(x - 4)^2 - 17$$





E. None of the above.

21. Solve the quadratic equation below. Then, choose the intervals that the solutions belong to, with  $x_1 \leq x_2$  (if they exist).

$$11x^2 + 11x - 7 = 0$$

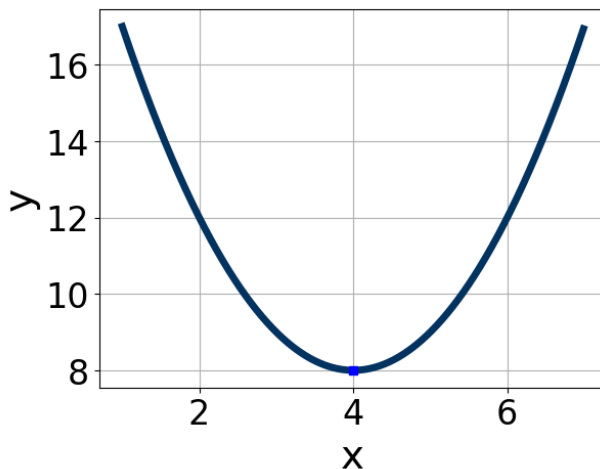
- A.  $x_1 \in [-16.2, -14.2]$  and  $x_2 \in [3.1, 6.4]$
- B.  $x_1 \in [-2.4, -1.3]$  and  $x_2 \in [-0.1, 1]$
- C.  $x_1 \in [-22.2, -21.1]$  and  $x_2 \in [19.1, 21.3]$
- D.  $x_1 \in [-0.5, 0.9]$  and  $x_2 \in [0.8, 3.3]$
- E. There are no Real solutions.

22. Solve the quadratic equation below. Then, choose the intervals that the solutions  $x_1$  and  $x_2$  belong to, with  $x_1 \leq x_2$ .

$$25x^2 - 15x - 54 = 0$$

- A.  $x_1 \in [-6.24, -5.32]$  and  $x_2 \in [0.19, 0.46]$
- B.  $x_1 \in [-3.77, -3.22]$  and  $x_2 \in [0.53, 0.91]$
- C.  $x_1 \in [-1.14, -0.1]$  and  $x_2 \in [5.22, 5.52]$
- D.  $x_1 \in [-2, -1.02]$  and  $x_2 \in [1.49, 1.96]$
- E.  $x_1 \in [-30.79, -29.91]$  and  $x_2 \in [44.88, 45.37]$

23. Write the equation of the graph presented below in the form  $f(x) = ax^2 + bx + c$ , assuming  $a = 1$  or  $a = -1$ . Then, choose the intervals that  $a$ ,  $b$ , and  $c$  belong to.



- A.  $a \in [0.4, 1.7]$ ,  $b \in [8, 10]$ , and  $c \in [7, 10]$   
 B.  $a \in [0.4, 1.7]$ ,  $b \in [-12, -6]$ , and  $c \in [23, 25]$   
 C.  $a \in [0.4, 1.7]$ ,  $b \in [8, 10]$ , and  $c \in [23, 25]$   
 D.  $a \in [-2.1, -0.5]$ ,  $b \in [-12, -6]$ , and  $c \in [-10, -5]$   
 E.  $a \in [-2.1, -0.5]$ ,  $b \in [8, 10]$ , and  $c \in [-10, -5]$

24. Factor the quadratic below. Then, choose the intervals that contain the constants in the form  $(ax + b)(cx + d)$ ;  $b \leq d$ .

$$54x^2 - 69x + 20$$

- A.  $a \in [17.39, 19.25]$ ,  $b \in [-7, -4]$ ,  $c \in [2.94, 4.46]$ , and  $d \in [-7, 0]$   
 B.  $a \in [1.64, 4.34]$ ,  $b \in [-7, -4]$ ,  $c \in [26.04, 27.12]$ , and  $d \in [-7, 0]$   
 C.  $a \in [0.38, 1.41]$ ,  $b \in [-48, -35]$ ,  $c \in [-0.78, 2.24]$ , and  $d \in [-27, -22]$   
 D.  $a \in [5.38, 6.58]$ ,  $b \in [-7, -4]$ ,  $c \in [8.38, 9.36]$ , and  $d \in [-7, 0]$   
 E. None of the above.

25. Solve the quadratic equation below. Then, choose the intervals that the solutions  $x_1$  and  $x_2$  belong to, with  $x_1 \leq x_2$ .

$$15x^2 + 8x - 16 = 0$$

- A.  $x_1 \in [-3.04, -2.28]$  and  $x_2 \in [0.32, 0.62]$
  - B.  $x_1 \in [-0.72, -0.03]$  and  $x_2 \in [1.57, 1.93]$
  - C.  $x_1 \in [-4.06, -3.53]$  and  $x_2 \in [0.19, 0.38]$
  - D.  $x_1 \in [-20.1, -19.82]$  and  $x_2 \in [11.94, 12.01]$
  - E.  $x_1 \in [-1.53, -0.75]$  and  $x_2 \in [0.64, 1]$
- 

26. Solve the quadratic equation below. Then, choose the intervals that the solutions belong to, with  $x_1 \leq x_2$  (if they exist).

$$17x^2 - 12x - 3 = 0$$

- A.  $x_1 \in [-3.49, -3.15]$  and  $x_2 \in [14.83, 15.69]$
  - B.  $x_1 \in [-0.77, 0.22]$  and  $x_2 \in [0.7, 1.97]$
  - C.  $x_1 \in [-19.05, -17.7]$  and  $x_2 \in [17.59, 19.71]$
  - D.  $x_1 \in [-1.08, -0.56]$  and  $x_2 \in [0.04, 0.28]$
  - E. There are no Real solutions.
- 

27. Factor the quadratic below. Then, choose the intervals that contain the constants in the form  $(ax + b)(cx + d)$ ;  $b \leq d$ .

$$36x^2 - 60x + 25$$

- A.  $a \in [5.04, 6.88]$ ,  $b \in [-6, -3]$ ,  $c \in [2.7, 6.4]$ , and  $d \in [-7, -4]$
- B.  $a \in [17.88, 18.99]$ ,  $b \in [-6, -3]$ ,  $c \in [1.8, 2.9]$ , and  $d \in [-7, -4]$
- C.  $a \in [2.15, 3.81]$ ,  $b \in [-6, -3]$ ,  $c \in [9, 12.3]$ , and  $d \in [-7, -4]$

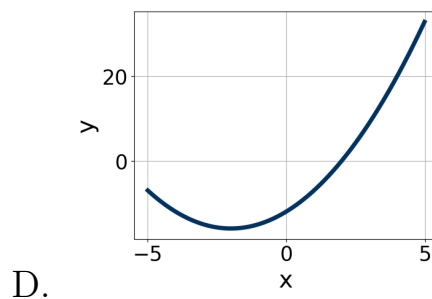
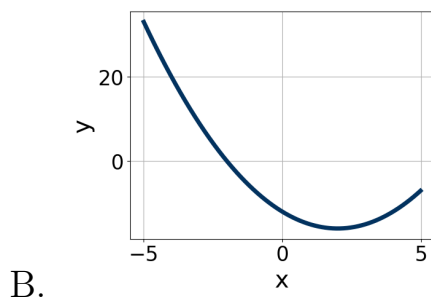
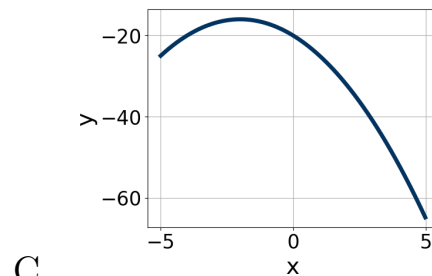
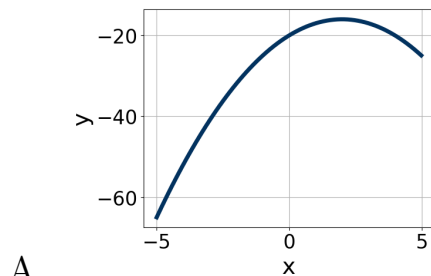
D.  $a \in [0.87, 1.65]$ ,  $b \in [-35, -27]$ ,  $c \in [-1.3, 1.3]$ , and  $d \in [-33, -21]$

E. None of the above.

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28. Graph the equation below.

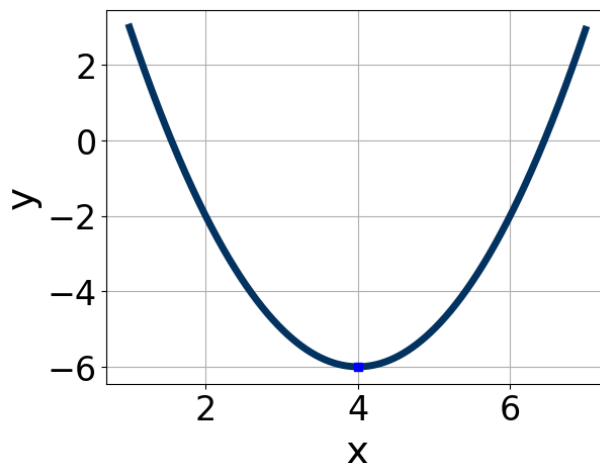
$$f(x) = -(x + 2)^2 - 16$$



E. None of the above.

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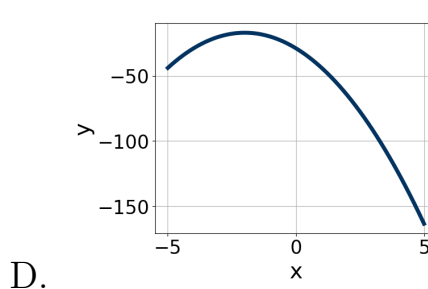
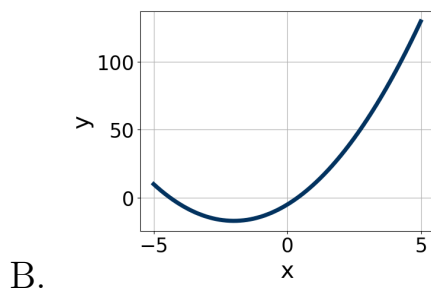
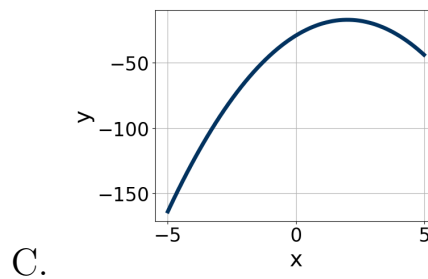
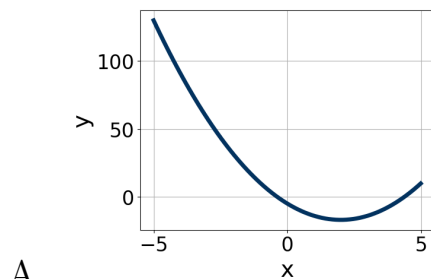
29. Write the equation of the graph presented below in the form  $f(x) = ax^2 + bx + c$ , assuming  $a = 1$  or  $a = -1$ . Then, choose the intervals that  $a$ ,  $b$ , and  $c$  belong to.



- A.  $a \in [0, 4]$ ,  $b \in [-8, -6]$ , and  $c \in [7, 14]$   
 B.  $a \in [-1, 0]$ ,  $b \in [-8, -6]$ , and  $c \in [-24, -21]$   
 C.  $a \in [0, 4]$ ,  $b \in [5, 10]$ , and  $c \in [7, 14]$   
 D.  $a \in [0, 4]$ ,  $b \in [5, 10]$ , and  $c \in [21, 23]$   
 E.  $a \in [-1, 0]$ ,  $b \in [5, 10]$ , and  $c \in [-24, -21]$

30. Graph the equation below.

$$f(x) = (x + 2)^2 - 17$$



E. None of the above.

